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APPALACHIAN FOREST EXPERIMENT STATION

Technical Note No. 29

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THE APPALACHIAN SCALE OF WIND VELOCITY

By

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In many phases of forest fire control an accurate knowledge of current wind velocity is helpful to dispatchers and fire bosses whose joint responsibility is the suppression of each fire as quickly and economically as possible. Such knowledge is especially valuable in the fuel types common to the Appalachian Mountain region, where wind has a pronounced effect on fire behavior. Wind velocity must be known in order to rate class of fire danger, to determine strength of attack, and to assure the choice of safe and effective suppression methods.

Ordinarily, wind velocities are measured to rate fire danger at key stations in the forest, but estimates must be relied upon at other points not equipped with wind-measuring instruments. The expense of anemometers limits their use and makes a guide for estimating wind velocity desirable.

The Beaufort scale of wind force, employed by the Weather Bureau and widely used in estimating wind velocities, is not applicable in the forested country of the Southern Appalachians, especially during fall, winter, and spring seasons when hardwood trees are leafless. Since most fires occur during these seasons it has been found necessary to adapt this scale to local conditions by assigning new definitions to the regular Beaufort classes. For this purpose, extensive observations were made on the Bent Creek Experimental Forest near Asheville, N. C.

The Appalachian Scale of Wind Velocity, shown below, should prove an aid in presuppression and suppression of fires and insure more accurate estimates of winds to be made and recorded on fire reports at each fire. Future analyses of such reports will therefore be more reliable than present ones.

Widespread use of the Appalachian scale should help every fire control officer get a better understanding of the effect of wind on fire behavior and should be of material assistance to him in interpreting fire-weather forecasts.

APPALACHIAN SCALE OF WIND VELOCITY

(A guide for estimating wind velocities in the Appalachian Mountains during fall, winter, and spring when trees are leafless.)

Effects of wind	Wind class, velocity in miles per hour	Terms used in U.S.W.B. forecasts
Smoke rises vertically; no movement of trees, bushes, leaves, or grass.	Less than 1	Calm
Dead leaves on oaks rustle; tall grasses and weeds sway slightly; leaves and twigs of laurel move very gently; wind vane barely moves.	1 - 3	Very light
Stands of broom sedge sway and bend with wind; twigs of hardwood trees and slender switches move very gently; small branches of pines move noticeably; wind flutters small flag; wind felt distinctly on face.	4 - 7	Light
Dry leaves on ground are blown about; twigs of hardwood trees move distinctly; branches of laurel shake and toss; large branches of pines in the open toss; wind extends light flag.	8 - 12	Gentle
Tops of large hardwood trees sway noticeably; pines in the open sway violently; dust is raised in road.	13 - 18	Moderate
Entire hardwood trees sway; their tops whip about violently; small twigs are broken from pines; inconvenience is felt in walking against wind.	19 - 24	Fresh
Branches broken from hardwood trees; progress is impeded when walking against wind.	25 - 38	Strong

